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all Spain and the simulating use of Gibbons's assertion that, if a man were called to die for the period during which the condition of the human race was happiest, he would name that which elapsed from the death of Domitian to the accession of Commodus, the author of this history points out that during more than sixty of these eighty years the Roman Empire was under the personal rule of a Spanish Emperor. Under good government Spain grew rapidly in wealth and importance, and, in this sheltered province the operations of war gave way to the arts of peace. Husbandry, the only form of labor that was not considered unbecoming in a Roman, grew to be a science and practice, and, with singular success. The olive flourished not only in Bætica, but in Tarraconensis. The cultivation of the vine was extended from the Straits of Hercules to the slopes of the Pyrenees, and the vines of Tarragona became highly appreciated in Rome. The Spanish olive oil held its own; the Spanish steel challenged comparison with that of Damascus. The flax which is said to have been introduced by the Phœnicians was worked by the hands of Spanish women into the finest linen that was to be found in Western Europe. The exclusively military roads that had been made for the purpose of facilitating the subjugation of the empire by what may be called trade routes in every part of the peninsula. The great road along the east coast from the Pyrenean frontier to the mouth of the Quaduquiver, the Via Augusta, was only one of many noble highways that opened the rich countries to the merchant and the traveller, and secured to them the most profitable and secure markets of his industry. Nor were imperial works restricted to those of mere utility. Artistic bridges crossed the broad streams that checked the country; aqueducts, creusets, baths, and public buildings of every kind sprang up throughout the land; it is from the days of the Spanish Emperors that the finest of the monuments are to be seen, a grandeur which will still be found in the peninsula. The beautiful arch of Torre-de-la-Barca in Catalonia, the famous bridge of Alcantara in Extremadura, the colonnade of Zalameda-de-Serena, the tower at Corunna, the Monte Ferrada in Galicia, the circus of Italica, and the magnificent aqueducts of Tarragona and Segovia, are the monuments of the splendour of the Roman Spaniards ruled the world, when the glories of Hispania confined to the development of material wealth, nor even to the splendour of the imperial administration. Even among educated persons few are alive to the fact that, from the death of Octavius to the death of Marcial, there is only one Latin writer of the first rank, and that is the poet of the elder Seneca, with his yet more distinguished son, the philosopher, and with his nephew, Lucan, the author of the Pharsalia. More are born at Cordova. Pomponius Mela, the first Roman geographer, was a native of Algeciras, and Columella, the father of agriculture, was a native of Cadix. Marcial was born at Bilbilis, the seat of the emperor's banishment, and left his home at Calahorra to give to Rome and to the world one of the most excellent text books that we owe to antiquity.

III.

Such being the condition of Spain in the first and second centuries after Christ, how are we to account for the rapid conquest of the province in the fifth century by the Visigoths, or rather by their immediate predecessors, the Vandals? The author of this book recognizes the difficulty of explaining the extraordinary fact, by which these barbarians came to have been able to possess themselves of the greatest and richest of the Roman provinces. No doubt the terror that was inspired by their vast numbers and by the names of their leaders was enormous. But the explanation must rest on their overran the Spanish peninsula in well nigh unopposable. Three months before their descent into Spain, just such barbarians had been driven out of the heart of Italy. Four years earlier, Alaric himself had been repulsed on the borders of Gaul and Burgundy. Why were the Vandals and Goths, and the Visigoths, able to

of the Italian? Were there no Spaniards left to fight the barbarians? No explanation is offered by history. We are merely told that, some five centuries after the matchless defence of Numantia, a barbarian host marched unchecked across the peninsula; that the fatherland of Viriatus was abandoned and looted without the serious opposition of a single Lusitanian; that the country which, for nearly two hundred years had resisted the forces of republican Rome, had yielded to the invasions of the Gauls, had defied consuls and defeated armies, and, when worn out by decades of conflict, had scarcely yielded to the generalship of Pompey and of Caesar. It is not that the Lusitanians were allowed, to submit to complete subjection at the hands of a horde of savages. This is certainly an historical enigma, and, by way of helping us to solve it, Mr. Burke invites us to consider the following suggestion. It is not that the Lusitanians were conquered; it was wrought in the provinces by the incidence of imperial taxation, and the tyranny of the imperial tax collectors, more especially after the time of Caracalla, was undoubtedly a terrible reality. It is not hard to understand that the Lusitanians, who were already being driven to despair by the consuming hierarchy of extortion, should await with indifference the approach of the barbarian as of something likely to change at least the nature if it might not lighten the weight of their misery. Almost certainly the Lusitanians were not permitted to render Spain an easy prey as the domestic slaves of Spanish manhood. That the paupers and slaves who composed the greater part of the population of Roman Spain in A.D. 400 should be willing or even able to take up arms against the barbarians, is hardly to be expected. For 500 years the free Lusitanians of the province had marched under the Roman standards to be slain on every frontier. The Spanish soldiers were not only the stoutest in the Roman armies of Rome, but they were, perhaps, the fiercest. The Lusitanian legionary never returned to Spain. He settled in Gaul, in Germania, where his ancient language is still spoken by his modern descendants, or it may be he killed himself with riotous living at the capital: most frequently he died in harness, fighting the battles of Rome, and leaving his less fortunate brother who remained in his province to come live and die a Roman slave.

In the third place, we are reminded that the large estates, or latifundia, which were said to have destroyed Italy, had also extinguished rural life in the provinces. The whole of Roman Africa in the time of Monitius is said to have been a vast estate, the owner of which, though he was not so enormous in the Theriacal peninsula, the extension of praedial slavery, in the absence of free laborers, or even of free agricultural tenants, combined with other causes to destroy agriculture and the great agricultural wealth of the country. The same was not once the case in the provinces, where the owner was not so enormous and the slavery was not so disastrous as the extinction of free labor in the province, yet it tended to degrade the whole country. Domestic slavery in the Roman empire was unquestionably the most demoralizing influence forming the institution of slavery, which existed in the civilized world. While it degraded labor, and rendered the great human utility of work one scarcely to be brooked by a free man, and thus struck at the root of all progress toward perfection in any art or craft, it extended the same influence to the whole of the extent of the empire, it was difficult to convert it into an

...so that it came to pass that, when the Spaniards and the Indians, there were, were not only no Roman soldiers; there were no Romans left to bar his entrance. The garrison of Spain had been gradually reduced to insignificant proportions, for in Spain there had been no fighting for four hundred years. Even the Spaniards needed no obligation, for no one was to be fought. The Spaniards had been so long at peace that the old fighting traditions had vanished, the old fighting traditions had died away; peaceful men and peaceful pursuits had taken their place. Those who were not slaves or paupers were emancipated by luxury, and the slaves were peaceful. There was nothing to fight, and they knew of nothing that was worth the wish of a slave. In the last place, Christianity was by no means the least of the manifold influences that tended to weaken the resistance of

the Roman provincials. It was not only that the new religion was the religion of peace, but the rise of Christianity was already a source of disunion among the forces of the Roman world. Few Christians who could avoid military service were to be found in the ranks of the army; their holdest spirits, were presbyters and deacons; their natural leaders were metropolitans and bishops. The kingdom of Christ was not of this world, and for worldly empire the Christian of that day hardly cared to fight. The end of the world, indeed, was daily, almost hourly, expected. The Christian of that day would not follow Christ would render unto Caesar the things that were Caesar's, but the business, the pleasure, the entire work of his life were concerned with the things that were God's.

IV.

We pass to the second great problem in Spanish history. If the rapidity and the completeness of the barbarian conquest of the fifth century is calculated to excite wonder, we survey with even greater astonishment the conquest of the Visigothic kingdom by the Moslems, for this was incomparably more rapid and more durable. The occupation of Spain, indeed, by the Visigoths, was a disaster to the barbarians, for the Visigoths, may have been regarded rather as a deliverance than as a conquest; for the arms of their amiable leader, Wallia, were directed, not against the Roman provincials, but against the terrible Vandals and Suevians and Alans, who had ravaged the country for nearly a century. The Visigoths, however, were not called to possess themselves of more than a portion of the province, and a great number of the cities remained in the hands of the Romans until at the approach of Wallia, in the guise of an imperial commander, the gates were opened to the Visigothic allies, the harbingers of peace to Roman Spain. When, some fifty years later, the imperial authority gave place to that of the Visigoths, under Euric, it was rather a change of government than a conquest by a foreign power. Thus to the Visigoths in Spain were given enormous opportunities for the development of a vigorous and enduring commonwealth. Treated from their first arrival in the country as friends rather than as foes, they entered into the peaceful occupation of the richest provinces of the Roman world and divided the broad lands that they yet remained of one of the richest races that yet emerged from the human race. For nearly 300 years, moreover, nine-tenths of the peninsula remained undisturbed by foreign invasion, and while the rare isolations of the northern frontier by Frank or Burgundian were promptly repelled, prudence forbade the Visigoths to molest the mines and treasure of the country were never at any time wasted in foreign wars. Spain, too, enjoyed from the days of Wallia to the days of Isidore the advantage of political unity. The state was never divided like that of the neighboring Franks, into rival and often hostile kingdoms, and the country was spared the dissensions and civil war. In a word, Spain, with its fertile soil, varied climate, majestic rivers, extensive seaboard, inexhaustible mines, and its hardy and frugal population, was the richest inheritance of the Gothic race. Yet, after three centuries of undisputed government, their rule was overthrown and their power forever by a handful of rascals from Africa.

18. Burke would account for this second enigma in this way. The military spirit, the personal courage, and the love of arms which had, before all things, distinguished the Goths of the North, had been gradually and completely extinguished. The Goths had disappeared. The military system devised by one of the Kings in the hope of "replacing the national spirit had been destroyed almost as soon as it was established by the churchmen whose power it threatened. No new national character had yet been created. The rageled by the bishops, after the conversion from Arianism to Catholicism, had nothing in common with the people, who despised, or the nobles, who assassinated them. The nobles, indolently wealthy, idle, dissolute, unwarlike, lived lives of luxury and ease, whose monotony was broken only by the chase. The absence of anything like a feudal system made the position of the great landholders a false one, and left their wealth without a justification, their estates without a reason, their lives without an object. If the lord had no influence, the vassal was not bound to him. In the end, in short, he found the Gothic serfdom as oppressive, and scarcely less demoralizing, than the Roman servitude. Christian bondage, from one point of view, was more odious, because more congruous. The Bishops were among the largest landholders. The monks, and, baptized Christians were bought, and sold, the same as slaves of St. Paul and Santiago. Kings without power, nobles without influence, a clergy always corrupt, a people not yet free, this was a poor result of three hundred years of domination. If the provincials of Honorius had been a people, the Goths would have been the subjects of Roderic were a nation of priests and slaves. Thus had the Roman and the Visigothic alike fallen into decay. The glory of the imperial dominion, the pride in the Gothic party, had alike departed. The successors of the Goths were a nation of slaves, a population without patriotism, without part or lot in the life of the country in which they lived, abandoned by Gothic kings to Roman ecclesiastics, the great body of the nation was ready to exchange the double yoke of their inglorious bondage for the practical freedom which they found under the Arabs.

AN especially weak spot in the Visigothic monarchy was the absence of hereditary right of rule. Had the kingdom descended from father to son, without the necessity of an election by a council in which the prelates took part, the throne would have been independent of the great metropolitans, and would not have been tempted to flatter the bishops in the hope of being able to supplant the kings. To the Catholic hierarchy must also be attributed another source of weakness which greatly contributed to the ease of the Mohammedan conquest. The conversion of the Visigoths to Christianity was followed by a furious persecution of the Jews, who were numerous and powerful in Spain, and in whose hands lay almost all the trade and manufactures of the country. Deprived of their ill rights, despoiled of their property, robbed their children, consigned to the tender mercy of the despotic ecclesiastics, scourged, tortured, reduced to slaves, the Jews were the most numerous and the most miserable of the population in Spain. If they had been rendered loyal they had not been rendered impotent, and in the last decade of the seventh century, it was discovered with horror and astonishment that the Jews were conspiring with the Saracens, already in Africa, against the rule of the Visigoths. The plot was discovered, and the misery from a change of masters in Spain, the plan which failed at that time, was, twenty years later, to prove successful.

The story of the Mohammedan conquest of Malabar is in itself a romance. A little army of Arabs and Arabs, led by a subordinate General, *tarik*, landed in the year 711 at the foot of the Western Ghats. The *tarik*, who was in the north of the peninsula, was ordered to take possession of his kingdom. The result we know. An army of 60,000 men, headed by the Visigothic *Umayyad*, with every advantage of locality, of supply, and of means of transport, was promptly met by a small force of Moslem *Umayyads*. *Tarik* won the greatness of an opponent. He led his little force into three columns and pressed forward to overrun the peninsula of Malabar. Astonishing was the success with which his audacious invasion was crowned. City after city opened its gates at the summons of the Moslem *Umayyad*. The Moslem *Umayyad* won victory on the banks of the Guadalupe. The kingdom of the Visigoths had ceased to exist. Such was the eagerness of submission that the Governor of Cordova is recorded as the important official who felt, without condition, to entrust the fate of the whole of Malabar to the work begun by *Tarik* was continued. The Moslem *Umayyad*, the direct representative of the Caliph, was presently carried across the Pyrenees over the southern province of Gaul which had long been governed by the Visigoths. The Bishops of the Moslem *Umayyad* were present, but Spain was abandoned to the Arabs. It was not a conquest, more than a conquest. It was rather an social

revolution. The Jews were avenged of their persecutors, the slave was set free, the old order of things passed away. All things had in a moment become new. What was the long struggle of the barbarian horde three centuries before to the lightning-like success of this handful of invaders?

The greater part of the Iberian peninsula accepted the Moslem rule without striking a blow, and the inhabitants, as a rule, having peaceably submitted to the inevitable, were suffered to remain in full possession of their lands and property, in every description. The only exception of which had to be made by the invaders with actual force of arms was one-fifth part reserved for the royal treasury, while the remainder was divided among the victorious soldiers. In the towns the inhabitants were generally left in possession of their houses on payment of the tax due by every free non-Moslem subject to the Moslem Government, in return for the protection of the Government, and the free exercise of their religion was allowed to the conquered Christians. Gradually the subject population emerged from the misery which they had experienced under the Visigoths, and thrived greatly under the enlightened sway of the Arab Amirs. The taxes were light. The laws were just. The nobles and the clergy were allowed to retain the ownership of the land, where the Arab could not or did not pursue them. The bishops and many of the clergy had followed them in their retreat. The Jews, the richest, the most enlightened, and the most learned of the old inhabitants of Spain, were not only tolerated but highly honored by the new rulers. The Christians came out, and the Jews and the Moslems did not desert. The Moslems, indeed, that the Jews had probably intended, and that the Moslems warmly welcomed, the Arabs into Spain. They had assisted the invaders in their struggles, and had furnished garrisons for many southern cities when the main body of the Moslem army was pressing forward to occupy the northern districts. They were not forgotten by the victors who were now in Spain. When the Moslem domination was complete, the Jews were cruelly injured as they had been by the kings and councils of the Visigoths, the Jews were generous in their hour of

tunity; we hear no word of Christians, lay or clerical, being persecuted by Jews in the day of their power and influence at the court of the Caliph. Nor, indeed, did the Christians suffer in any way on account of their religion at the hands of the Arab and Moorish conqueror. Many Christians and Visigoths embraced Islam, aspiring to positions of honor or profit in the state, and the slaves who adopted the Moslem creed were given their freedom, and the whole of their Christianity above honor or profit was liberty not only to maintain their ancient faith but to profess and follow it in public churches were retained by the Christians in every city in the peninsula; and mass was celebrated in the same manner as to the Mozarabic ritual under the protection of the Moslem authorities. The only burden to which the Christian or Mozarab was exposed from which the true believer was free was that of an annual tribute or poll tax. In every other respect the Moslem government, that nominal equality was the rule of the Arab in Spain. In the early days of the occupation, even when the invader was speeding, sword in hand, throughout the country, the general order to the Moslem soldiery was to abstain from any act of violence or injustice. The Christian writers admit that their instructions were almost always carried out, and in recognizing the supremacy of the invader invaders was do doubt visited more than once with hasty slaughter. It is equally true that the Moslem government was a constructive product of an inherent intolerance, and that the signal for outbreak of an enraged Islam, for some centuries after the country was fully regulated the Christian Spaniard not only enjoyed personal and religious freedom, but he attended the public ministrations of his own religion, and was free to interpret his own laws, interpreted by his own Judges; and, on the whole, the new rule was one of peace, prosperity, and justice.

VI.

Ve turn to the author's account of the Caliphate of Cordova at the acme of its splendor. In the tenth century, under the master hand of the blue-eyed, fair-skinned Arab, the ambitious, wise, prudent, and accomplished Abdur Rahman al Nasir, who first assumed the title of Commander of the Faithful, Moslem Spain was raised to a degree of power and civilization unnamed by any former and contemporary sovereign, and scarcely surpassed in modern times. In the course of a reign of nearly fifty years this prince raised the rule of the Moslem Spain to the highest pitch of glory and pros-

city, and made the title of Caliph of Cordova widely known and honored than that of the Caliph of Bagdad. The Caliph of Cordova was the most magnificent, the most luxurious, the most civilized city of medieval Europe in the tenth century of our era. The markets were always stocked with the richest and most varied products of every country. According to a contemporary writer no robe, however precious, was so rare as to be worn by two persons; no rarity of distant and unwarmed lands was wanting in its splendid varieties. Even before his arrival the visitor had to forego the luxury that awaited him, as on all the principal roads leading to the Caliph's palace the principal residences, everything of value, the finest fashions of the Anguloles maintained by the modern Anglo-Ian Government for the gratuitous occupation of travellers. Within the city, the Caliph had his palace of Flowers, his Palace of Comfort, his Palace of Lovers, and most beautiful of all, his Palace of the Waters, which was in gardens watered by the Guadalquivir. The humblest Moslem took his ease in the great Meadow, in the Garden of the Waters, and the Meadow of Murmuring Waters. The rich and poor met in the Mezquitas, the noblest place of worship then standing in Europe, larger than any since the time of the Crusades, and adorned in magnificence by St. Peter's, with its five hundred marble columns and its twenty thousand doors; the vast interior resplendent with porphyry and jasper and many-colored precious stones, the walls glittering with harmonious colors, the air perfumed with incense, the atmosphere of the most beautiful of orders, and throughout the city there were fountains, baths, and cold water brought from the neighboring mountains, already carried in the pipes that are the highest triumph of modern plumbing. A contemporary observer writes: "The Arabs of Andalus are the most people of the world to be regarded as the most dress, bed, and the interior of their houses; indeed, they carry cleanliness to such an extreme that it is not an uncommon thing to see a man of the lower classes to spend his last penny in soap, instead of buying food for his family, rather than appear in public in dirty clothes." Of the universal dirtiness of their

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and most precious marbles; of these some were brought from Africa, some from Rome, and many were presented by the Emperor at Constantinople to Abdur Rahman. The halls were covered with marble, disposed in a thousand varied patterns. The walls were of the same material, and ornamented with friezes of the most brilliant colors. The ceilings, constructed of cedar, were enriched with gildings on an azure ground, with damasked work and interlacing designs. Everything, in short, that the taste of the Caliph could command was lavished on this favorite abode. It is said that the art of Constantinople and Bagdad could contribute to aid the taste and executive skill of the Spanish Arabs was enlisted to make the most perfect work of its age. Did this palace of Caliph now remain to us we could trace the progress of the taste of the Caliph, and the works of the declining age of Moabit.

VII.
Nor was it only material splendor that was to be found at Cordova. At a time when Christian troops were steeped in ignorance and barbarism, the sciences, and especially the sciences of agriculture, were in such a state of prejudice, every branch of science was stunted, that the knowledge and influence of the Ommeiyad Calipha, Medicine, surgery, botany, chemistry, all flourished at the court and city of Cordova. Agriculture was cultivated to a perfection, both theoretical and practical, which is apparent from the works of contemporary Arab writers. The seeds of science introduced into England as a valuable agricultural novelty is not only the invention of the Arabs, but the very name is Arabic, as is that of *estufa* and of the *norio* of modern Spain. The introduction and the third Abdur Rahman were passionate lovers of the sciences of agriculture, and seeds, roots, and cuttings were sought from all parts of the world and accumulated in the gardens at Cordova. A pomegranate of peculiar excellence, the *sotari*, which was introduced by the second Abdur Rahman, Damascus, still retains its superiority, and it is known to the present day as the Granada *sotari*.

The encouragement that was given by the pupils at Cordova to men of science and learning of every kind, and especially the richly-endowed Al-Hakim, who was a man of letters and a philosopher, made Cordova the home of the philosophers, and the students, and the experimentalists of the medieval Europe. Almanzor, who was the last political figure in the latter half of the ninth century, was also a collector of books and a patron of science. The political anarchy that followed on his death did not immediately drive away the philosophers from Cordova. It was chiefly, if not entirely, by the work of the Moslem doctors of Arab Spain, even when the political figure of the caliphate had departed, that the sciences of the Middle Ages were being nurtured was once more brought before the Christian world, and attention was awakened in medieval Europe, until, at length, knowledge was triumphant at the Renaissance, and thought was made free at the Reformation. Thus it was that the sciences were associated in the minds with a narrow and intolerant ecclesiasticism, the lamp of learning was, as a matter of fact, kept alight even in the darkest ages of Papal oppression and Italian ignorance. It was not until half a century from the day when Hilgerbein was born at Cordova, that the sciences were born at Cordova. The immediate successor of Avempace of Saragossa, the friend of Abenzor of Seville, the disciple of Abenbarce of Cordova, Averroes is accounted the founder of science and philosophy in medieval Spain, the first of the great philosophers upon the world at large; yet he was in principle among many learned peers in the Arab schools of Cordova. High among those proven worthies stands the name of Hasan bin Haim, more commonly known in the West as Avicenna, who was born in the city of Hamadan in Persia, and who certainly lived and died at Cordova in the early years of the tenth century. Over two hundred years before the time of Roger Bacon, the Christian world was suffering persecution and actual imprisonment for the noblest of human discoveries. At Hasan lived too early to be appreciated by Christian men of learning. His works, however, remain, and his discoveries smoothed the path of future students, ignorant, perhaps, of the worth of his teachings. It is interesting to note that his explanations of the physical properties of the human vision are no more remarkable than his discoveries with regard to the properties of light; his demonstration of the nature of the atmosphere and his bold but accurate theories of the rainbow. He was a philosopher of the physical sciences generally, while his theory of gravitation was only modified after a lapse of nearly five hundred years by Newton.

VIII.
The greatest names in the literature and science of Moslem Spain is that of Averroes, who was born at Cordova in the dark days of the last moravids, in 1126. Strange to say, he ended but little reputation among his Arab countrymen, except as a physician. Assuredly, he counted no school in his own country. His successors in the East are not Moslems, but Jewish disciples of Moses Maimonides. His is due entirely to the Christian doctors admired, misunderstood, discussed, and even hated by the Christian writers. Almost no influence in Islam was due to him, whose translations and speculations were heeded whose fruit was the reformation of Islam. Out of Cordova shone the light; Cordova itself was soon enveloped in the

translation is directed by our author to the tract Averroes, the translator and preserver of Aristotle, was himself not acquainted with the language of the original, and that the Latin Christian doctors of the twelfth century had no translation of a commentary of a Hebrew translation of a commentary of a Hebrew translation of a Syriac translation of the original Greek texts. Yet although Averroes was a convert of Greek, and although he was so far from being the first translator of Aristotle, he is so keen and just an appreciation of the works of the *Stagirite* that his view is certainly due to the influence of the great philosopher to the eastern Europe. His own view is not only not affected by the neo-Platonism of the Andrian school. Yet Aristotle was his master, his model, the inspirer of all his works, and in his medical writings, more celebrated than his contemporaries, than his philosophical writings, Averroes is always the champion of Aristotle. He is the champion of Aristotle in his medical writings, especially in his celebrated treatise on medical science, translated into Latin under the title of "Colliget," and reprinted in Europe. The total number of his works that have been identified is sixty-seven; but the detection of Arabic manuscripts during the fall of the Crusades, the discovery of the original texts of Averroes, as well as the Spanish and Arabic author, of extreme rarity.

the Arabic numerals in European history upon which the present system is based. It is true that the Spanish Arabs were merely philosophers or physicians. The numeral figures that are applied use throughout modern Christendom, though they were invented in India, were introduced by the Arabs, and are still called by their original name, *algarabismos*. It is also true that the Arabic numerals, known even as the great *algarabismos*, were introduced into Spain by the Arabs, and the English word *algarabism* is the original of *algar*, or "the reduction of numbers." The Arabs more punctiliously and still call the science of *algar* or *al makasid*, meaning that of "reduction and comparison." Among thus rendered, possible arithmetical calculations which under the Roman system of notation could not even have been attempted, the Spanish Arabs proceeded to develop the science of quadratic equations and the binomial theorem. They invented spherical trigonometry, and applied it to the solution of astronomical problems. They introduced the tangent, and to substitute the sine for the arc in trigonometrical calculation. At a time when Europe firmly believed that the earth was flat, and was not ready to burn any foolhardy person who contradicted the Moslems at Cordova teaching geography by globes.

In Europe. Avenzoar, a chemist and a saint, published an elaborate pharmacopoeia for the use of his students at Cordova. Surgery, too, which was but lightly esteemed by Christian nations until comparatively modern times, had its professors and practitioners in Seville Spain. Albucasis of Cordova was not only a bold and skillful operator, but his treatise on surgical instruments may be read with interest at the present day. Surprising as it may seem to us, the students of medicine were confined to the male sex; on the contrary, a read of feminine scholars and doctors who graduated in the schools of Cordova, and taught their skill and science to the students of their Arabian sisters, the students of the

the universities of Moslem Spain, not only Cordova, the capital, but at Seville, Salamanca, Toledo, and Granada, arithmetic, algebra, trigonometry, astronomy, the entire circle of sciences, chiefly occupied the attention of the scholars. The sciences, however, gave names also on philosophy, on natural history, literature, rhetoric, and composition. The familiar tongue, which, it was their boast, was most perfect ever spoken by man, was studied with peculiar care. At the same time foreign languages were by no means excluded from the schools. The Arabs, the Persians, and even of the Arabic, but of Greek, Latin, and Hebrew, were prepared and read. The works of the great master of science, Isaac ben of Granada, constitute one of the earliest encyclopedias in the world of letters, and the library of the Caliphs of Cordova, which contained the treasure house of Graeco-Latin to the students of mediæval Europe. The universities of Moslem Spain were, beyond a doubt, a resort of students from the tenth to the fifteenth centuries from every part of Europe. The celebrated Gerbert, afterward Sylvester II., was educated at Cordova, and the famous student at Cordova toward the end of the tenth century. Teachers of Peter the Venerable, the friend and protector of Abelard, at much of his time in Cordova, and not only spoke Arabic fluently, but actually had the Arabic language as their mother tongue. On his first arrival in Spain, he and several learned men, even from England, studying economy and other less recondite branches of science. It was certainly from Toledo that Michael Scott brought his translation of Aristotle and Averroes, at the beginning of the thirteenth century. The Emperor Frederick II., Hermann, German, continued Michael Scott's work at Cordova, and carried his versions of other works of Aristotle and Avicenna, from Naples, son of Frederick II., had inherited his father's tastes for the sciences, and was afterwards educated by the Emperor toward the professors of literature. It is attested in the fact that, in Spain, Christians, even Jews, were appointed to direct the studies in the academies or colleges of Cordova. Their learning was, in the estimation of these Moslems, of greater value than the religious

willing as the author of this history to
to gnize the debt of Europe to Cordova, he
desires why all their liberality and all their
dition did not avail to save the Spanish
1808. The patronage of the Abduz Haimans
of the Hakams, the studies of Abdouzar
of the great library at Al Zahra, the
erogue of which was hardly contained in
of four large volumes, the scholars who
did to Cordova from every part of Europe
the East, the learning of the professors, the
opulence of the students, the skill of the op-
erations, the refinement of the men and women
of the city, the abundance of the sciences,
all, this all availed nothing against the in-
fusions of barbarians from Africa, the Almor-
avids and the Almohades, and the more deadly
internal forces of disintegration and decay. The
master supplied not the place of the
man; the highest education could not
prevent the decay of the people, the degen-
eration of the race, the loss of the spirit.
The pen, in word, proved powerless
for the protection of the word. The insti-
tutions that had flourished under the Moslem
when the Moslem departed; and, after four
centuries of light and leading, Andalusia fell
under the Christian rule into a condition
of ignorance and barbarism, if not quite
so bad as that of the northwestern provinces
of peninsula.

X.

fore taking leave of that part of this-
which is devoted to the Arabs and the
we should note that not only philosophy,
mathematics and mathematics, chemistry and
physiology, medicine and surgery, intelligent archi-
tecture and scientific irrigation, poetry and art-
istic composition, but also music and all the
arts and refinements of life were studied
practised with success at Cordova and other
places of Mohammedan civilization in the pen-
insula. The invention of the mariner's com-
pass, of gunpowder, of the printing press, and
of the compass, were all first introduced
into the world by the Spanish Arabs. Especially
did a word be said about the Arab archi-
tecture, which, after the eleventh century, under-
went a fundamental change, resulting, two cen-
turies later, in a brilliant outcome which was
characterized by novelty of form as well as by

author of this book would describe as Arab Byzantine the style that was introduced into the peninsula by the Moslem conquerors in the eighth century. From the moment, however, of the landing of the invaders the style of the Moslem architecture, which many magnificent examples still surround them, cannot have failed to make felt. At Merida, at Italica, at Cordova, at Seville, at Toledo, and at Tarragona the remains of Roman greatness, of which the Moslems had inherited the taste, were to astonish and inspire the newcomers, to be not long before they themselves added to the architecture of Spain. The great mosque at Cordova, constructed in the tenth century, some reference has already been made to its structure, and its style is so simple and severe, reproducing the Arab of Damascus and Bagdad, inveterate, with greater dignity and with a superb vigour by the local influence of imperial Rome, that it is almost without twelfth century, as we have said, the style of the architecture in Spain was considerably altered. Aside from the natural and natural development inseparable from all true art, it has been affected by Indian, Egyptian, Persian, and other elements, which, in any case, it separated itself from and more from its parent, the architecture

Tradition, and from the grander traditions of Rome. Of this intermediate, few remnants exist in Spain. The only known traces are the mosaics attached to the mosque at Cordova, the Alcazar and the Giralda Tower at Seville (1105). They were regarded as specimens of the transitional period which, among other changes, was characterized by the character in which the decorative inscription was placed in place to the cursive character that forms today a feature in the decoration of the Alcazabra. The date of these buildings, however, is uncertain, and we can hardly be said to have reached the stage of the evolution of the Islamic architecture during the period that followed the downfall of the Umayyad state. As soon, however, as the thirteenth century is reached, we find a new Arab style in the peninsula, Moslem, no longer in the hands of the contemporary architects of Spain, but in the hands of the descendants of those Syrian Arabs who had fled at second Damascus at Granada reached almost perfection on the banks of the Guadalquivir. They no longer enjoy the artistic freedom in contemporary Islam, but are usually allowed to Cordova. It was not until the Spanish Moslem was less powerful and his culture less directly influential, as he had, in two centuries, become at a relatively much more civilized and more artistic and actually distinguished by his characteristic originality and spontaneous development than had been the Cordova of the Caliphs. Among all the buildings of the peninsula of Spain, all the buildings of the empire of Granada have long been considered one of the greatest marvels and examples of superlatively graceful construction.

The well-known monograph by Mr. Owen led to the effect that by no builders in the world has the paramount rule that the architect should decorate construction, and not construction, been more perfectly carried out than in the famous buildings of the Alhambra. Every part and every curve is so wisely decorated that where it should be, and they all are, and none other in natural as well as graceful situations. There is thus nothing extraneous, nothing that could possibly be removed without spoiling the symmetry and the whole. Whether the Moors in their marvellous second-century work followed fixed rules, or only in accordance with an early organized natural instinct, which they obtained by centuries of refinement and intelligent study of the works of predecessors, it is now impossible to say. With regard to the colors, however, we may discern at least the general idea that primary colors were used on the proportions of the work and secondary or tertiary colors on the lower, a rule which like all great canons of taste, seems certainly to be in accordance with the human eye. One peculiarity of the ornamentation of the Alhambra is especially noted by Mr. Owen, and that is, that although many of the ornamental patterns are repeated in the various places, in different positions, they always occupy the place that they occupy. The pattern is always in the same place, and the ornament appears specially designed and made for the particular spot in which it is used. We note, finally, the interesting fact that in their domestic architecture the Arabs almost solved the problem how to penetrate light and ventilation into the interior of different temperatures, the temperature of the apartments served not only by ornament, but to equalize the temperature, to admit of concealed openings whereby light could penetrate without draught or chill.

Whenever anything has to be done among the Russian laboring classes the first step is to organize an *artel*. This is an association of persons who unite their capital and labor, or only the latter, for a certain piece of work or other undertaking and who are mutually responsible. They are not mere labor unions; some are for building railroads or working mines, for cultivating land or cutting wood, but others are for managing *trading* concerns, and, even for *taxing*. The institution dates from the 17th century, when the Dnieper Cossacks formed themselves into bands to plunder the surrounding country; then associations for hunting or fishing, and, in time, for other purposes.

All artists are organized in the same way: a number of men agree to work together and share the profits or losses. They pledge themselves to act fairly to one another, to look out for one another's interests, and to stand by one another. The earnings, and the losses, are shared equally among them. They choose one man among them to be their starosta, or leader, and put the entire management of affairs in his hands. His authority is absolute as long as he holds the office. Any member who refuses to obey his orders is expelled from the association, and loses his share of the earnings. At the end of six months the starosta must give up his office, and management. All grievances are considered, and, if he is judged unworthy, he is removed. The position is one chiefly of honor, as he receives only a small sum more than the others.

Some of the artels are permanent, others only temporary, but perhaps more interesting. When a snow melts, all the laborers in a village who have no work in the village go and form themselves into an artel and send out their starosta to find where work is needed. The starosta agrees with some landowner that his artel shall do a piece of work, the ploughing and sowing, or perhaps all the farming, and in return receive either a sum of money or a share in the crops. The artel then goes to the estate and operates as usual only for its work, but for the safety of the crops the farmer watches during the appointed time. If the crops are burned each member of the artel is personally responsible to the proprietor. They keep watch over one another to see that the artels are not cheated of work due to it or loses by their carelessness. The starosta acts as overseer, caterer for the men, who live and eat together with their tools and divided the money among them equally after deducting the expenses. When times are hard, artels are formed for begging, and go from village to village asking for alms. It is not unusual to find a man who has refused to work for fear of offending the starosta, and is being sent back to the village with 3,000 money has thirty exchange and some of the merchandise that comes to the city; some simply banks and commercial houses, and some are the work of the artels and the artels provide water.

A man is thoroughly examined before he is admitted into a permanent artel. Strength and in some cases mental power and trustworthiness are needed, as the artel must be able to resist temptation and a blunder he may commit, and looks out for him for a year if he is sick. New members pay an entrance fee of 100 money, and the artel has \$750. Though the poorest and most ignorant peasants can form an artel, no associated form of government patronage is required to be successful.

It does not follow that the cheap ready-made clothing that has astonished this town for the last two or three years is necessarily poor stuff. The best of it is, in fact, very good, and the manufacturers of established repute have not, in cheapness of it, seems, at a very handsome gain. One of the latest lines of ready-made trousers cleared well on to \$400,000. Much of the material is so cheap when bought in the quantities that the large clothes-makers take as much the cost of the material in a suit of ready-made clothing often only a little more than \$1, and sometimes less than \$1.50. The labor cost is a comparatively small item. The quality of the clothing is thoroughly well served, and besides, outers are highly paid and designers even more highly. One designer for a large clothing house is said to receive about three times the salary of a Cabinet officer. There are ladies well-paid salesmen and a small army of other employees of the ready-made clothing industry. Their cloth to the most thorough test as to tensile strength and stability of color.

The goods of which these clothes are made are largely of American manufacture, though the reduction in the tariff has let in an immense quantity of English woollens. These sales are now being made in the city of Chicago. There was a general lightening of weights to meet the demand for cheap garments, but an excellent stuff has gone into ready-made clothing. The American stuffs owe much of the recognition that they have gradually obtained to the order of the army, and to great clothing houses. Men have found that ready-made clothing at moderate prices served them well, and they returned for more of the same. This was in many cases equivalent to ordering American stuffs. The superstition as to the superiority of cloth made in England is doing good to order. They demand goods of a reputation that they get it. There is, however, plenty of American cloth of a reputation that is not so great as yet. It is to eradicate the superstition as to the best goods, though the widening circle of choice is not so great as it has been for the demand for American clothes.

The quantity of cloth and material bought for ready-made clothing is enormous. It is of a single kind of cloth for more than a million suits, and of a single material for more than a million coats. It is often made to order for a single house, and is sold in the great quantity of suits and coats made to order. The goods are made to be clad in such a variety of colored and patterned materials. Some houses purposely buy a great quantity of material, and make it up so that their customers shall not insist on the latest styles, but have the goods made to suit the important to men of quiet tastes.

Inconspicuous clothes, and are made to order. It took this country a long time to learn the excellence of European woollens, and it is now becoming a thing when still whole, and the goods are made to order. There was a time when the process of making the goods were hurried to the detriment of the quality of the goods. This is now happening less often now. There is a great deal of poor American material, and a great deal of poor American material.